MODULE DESCRIPTOR

Module Title

Pharmacology for Drug Design

Reference	PLM342	Version	1
Created	June 2023	SCQF Level	SCQF 11
Approved	July 2023	SCQF Points	15
Amended	August 2021	ECTS Points	7.5

Aims of Module

To develop the student's understanding of how chemical and biological sciences integrate to produce pharmacological effects, so as to enable them to critically discuss and evaluate the role of pharmacology in drug design and delivery.

Learning Outcomes for Module

On completion of this module, students are expected to be able to:

1	Demonstrate a critical understanding of principle drug targets, drug interaction with targets and how drugs produce pharmacotherapeutic effects at a biochemical and physiological level (pharmacodynamics).
2	Critically discuss and appraise sources of pharmacological agents and the routes of administration which will optimise absorption, distribution, metabolism and excretion (ADME) of drugs (pharmokinetics).
3	Demonstrate critical understanding and application of mathematical and graphical models used in the interpretation and representation of pharmacological data.

Indicative Module Content

Pharmaceutical chemistry and biology. Pharmacodynamics: drug classifications - full/partial/inverse agonists and antagonists; drug targets - receptors, enzymes, channels and transporters; drug specificity and selectivity; mechanisms of drug action. Pharmacokinetics: drug administration - single dose, multiple dose, delivery route; absorption, distribution, metabolism and excretion (ADME); pharmacokinetic parameters - bioavailability (F), salt factor (S) volume of distribution (Vd), extraction ratio (E), absorption and elimination rate constants (Ka & Ke), clearance (Cl); zero and first-order elimination. Quantitative analysis of pharmacodynamic and pharmacokinetic effects; drug target binding, blood drug concentration/ time relationship, pharmacokinetic formulae. Pharmacotherapeutics: drug efficacy; adverse drug reactions and interactions.

Module Delivery

The module is delivered by lectures, tutorials, coursework and online learning activites.

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Indicative Student Workload	Full Time	Part Time
Contact Hours	30	N/A
Non-Contact Hours	120	N/A
Placement/Work-Based Learning Experience [Notional] Hours	N/A	N/A
TOTAL	150	N/A
Actual Placement hours for professional, statutory or regulatory body		

ASSESSMENT PLAN

If a major/minor model is used and box is ticked, % weightings below are indicative only.

Component 1

Type:	Coursework	Weighting:	100%	Outcomes Assessed:	1, 2, 3
Description:	A critical review of literature pertaining to the pharmacodynamic, pharmacokinetic and pharmacotherapeutic profile of a given drug compound.				

MODULE PERFORMANCE DESCRIPTOR

Explanatory Text

Component 1 (CW1) comprises 100% of the module grade. To pass the module, a minimum of a D grade is required. Non-submission of this component will result in an NS grade.

Module Grade	Minimum Requirements to achieve Module Grade:
A	A
B	B
C	C
D	D
E	E
F	F
NS	Non-submission of work by published deadline or non-attendance for examination

Module Requirements

Prerequisites for Module	None, in addition to course entry requirements.
Corequisites for module	None.
Precluded Modules	None.

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INDICATIVE BIBLIOGRAPHY

1	Rang, H. P., Ritter, J. M., Flower, R. J., Henderson, G. (2016). 'Rang and Dale's Pharmacology', 8th edition, Elsevier.
2	Kenakin, T. P. (2017). 'Pharmacology in drug discovery and development: understanding drug response', 2nd edition, Academic Press.
3	Loftsson, T. (2015). Essential pharmacokinetics: a primer for pharmaceutical scientists', Elsevier Academic Press.
4	Talevi, A., Quiroga, P.A.M. (2018). 'ADME Processes in pharmaceutical sciences: dosage, design and pharmacotherapy success', Springer.